WO 2005/064948 PCT/IB2004/052692

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**CLAIMS:** 

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1. An apparatus for efficiently performing spatial scalable compression of video information captured in a plurality of frames including an encoder for encoding and outputting the captured video frames into a compressed data stream, comprising:

a base encoder (214) for encoding an interlaced bitstream having a relatively lower pixel resolution;

a spatial enhancement encoder (224) for encoding a differential between a deinterlaced local decoder output from the base layer and an input signal for producing an intermediate enhancement stream.

- 10 2. The apparatus according to claim 1, wherein a de-interlaced local decoder output is upsampled prior to the spatial enhancement encoder.
  - 3. The apparatus according to claim 1, wherein the input signal is a de-interlaced version of the original interlaced input signal.

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- 4. The apparatus according to claim 1, wherein the input signal is a downsampled version of the original input signal.
- 5. The apparatus according to claim 4, wherein a downsampler (210) is used for creating a base stream which is inputted into the base encoder.
  - 6. The apparatus according to claim 5, wherein a re-interlacer (212) is used to create an interlaced base stream which is encoded by the base encoder.
- 7. The apparatus according to claim 1, further comprising: temporal subsampling unit (232) for subsampling the intermediate enhancement stream to produce a spatial enhancement stream.
  - 8. The apparatus according to claim 7, further comprising:

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means (246) for adding together the local decoder outputs of the base encoder and the enhancement encoder;

means (232) for temporally subsampling the combined local decoder;
means (234) for applying motion compensated temporal interpolation to the
temporally subsampled signal.

- 9. The apparatus according to claim 8, wherein the output of the local decoder of the base encoder is compared with the temporal interpolated signal.
- 10. The apparatus according to claim 9, wherein information is encoded as a temporal enhancement signal on groups of pixels when said comparison exceeds a predetermined threshold value.
- The apparatus according to claim 8, wherein the motion compensated temporal interpolation is natural motion interpolation.
  - 12. The apparatus according to claim 11, wherein the motion estimation of the temporal interpolation makes use of the local decoder signal of the base encoder.
- 20 13. The apparatus according to claim 1, further comprising:
  a multiplication unit (242) for multiplying input signal to the spatial enhancement encoder.
- 14. The apparatus according to claim 13, further comprising:
  25 a signal analyzer (404) for controlling a gain of the multiplication unit.
  - 15. A layered encoder for encoding an input video stream, comprising: an interlacer unit (212) for creating an interlaced base signal from the input video stream a base encoder (214) for encoding the interlaced base stream which has a ·lower pixel rate;

a de-interlacer (218) for de-interlacing a local decoder output from the base encoder;

a subtractor unit (222) for subtracting the de-interlaced stream from the input video stream to produce a residual signal;

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an enhancement encoder (226) for encoding the residual signal and outputting an intermediate enhancement stream.

- 16. The layered encoder according to claim 15, further comprising: a temporal subsampling unit (232) for sampling the intermediate enhancement stream and outputting a spatial enhancement stream.
- 17. The layered encoder according to claim 16, further comprising:

  an temporal subsampler (232) for temporal subsampling a combined local

  decoder output of the base encoder and the enhancement encoder;

a motion compensated temporal interpolation unit (234) for performing motion estimation on a signal outputted by the temporal subsampler;

an evaluation unit (236) for comparing interpolated frames from the motion compensated temporal interpolation unit with actual frames from the local base decoder, and selecting data as a temporal residual stream when the comparison exceeds a predetermined threshold value; and

a temporal encoder (238) for encoding the temporal residual stream to produce a temporal enhancement stream.

- 20 18. The layered encoder according to claim 17, wherein the temporal encoder is being realized by muting information of the enhancement encoder.
  - 19. A method for encoding an input video stream, comprising the steps of: creating an interlaced video stream from the input video stream
- 25 encoding the interlaced video stream to produce a base stream;

de-interlacing a local decoder output from a base encoder;
subtracting the de-interlaced stream from the input video stream to produce a first residual stream;

encoding the resulting residual stream and outputting an spatial enhancement

30 stream.

20. The method according to claim 19, further comprising the step of: temporal subsampling the intermediate enhancement stream to produce a spatial enhancement stream. 10

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- 21. The method according to claim 20, further comprising the steps of: performing a temporal subsampling a combined local decoder output of the base encoder and the enhancement encoder;
- 5 performing motion estimation on a signal outputted by an temporal subsampler;

comparing interpolated frames from a motion compensated temporal interpolation unit with actual frames from the local base decoder, and selecting data as a temporal residual stream when the comparison exceeds a predetermined threshold value; and encoding the temporal residual stream to produce a temporal enhancement stream.

- 22. A decoder, comprising:
  - a first decoder (300) for decoding a spatial enhancement stream;
  - a second decoder (302) for decoding a base stream;
    - a de-interlacer (306) for de-interlacing the decoded base stream;
- an addition unit (312) for adding the de-interlaced decoded base stream and the decoded spatial enhancement stream.
- 20 23. The decoder according to claim 22, further comprising;
  an upsampling unit (308) for upsampling the de-interlaced stream prior to the addition unit.
  - 24. The decoder according to claim 22, further comprising:
- a temporal subsampling unit (310) for temporal subsampling the de-interlaced base stream;
  - a motion compensation temporal interpolation unit (314) for interpolating an output from the addition unit;
    - a third decoder (304) for decoding a temporal enhancement stream;
- a combination unit (316) for combining the upsampled stream, the interpolated stream and the decoded temporal enhancement stream to produce a decoder output.